

ORTHOCHROMATIC  
AND  
COLOUR PHOTOGRAPHY.

- Instruments -  
for Light Measurement  
Arc Lamps etc.

SINGER SHEPHERD & CO  
- LONDON -





5.6.7

GRAY'S INN  
PASSAGE  
RED LIONS ST.  
.....  
HOLBORN,  
LONDON.  
W.C.  
.....

TELEGRAMS— SENTIDO, LONDON.

TELEPHONE—8722 CENTRAL.

## 1907 Price List,

Cancelling previous Lists

OF

**LIGHT FILTERS,**

**CAMERAS, AND ALL MATERIALS**

FOR

**ORTHOCHROMATIC**

AND

**COLOUR**

**PHOTOGRAPHY.**

Scientific Instruments for

Light Measurement, Photo Spectroscopes,

Photo Micrographic Appliances, etc.

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### Terms.

Prices quoted are at our Factory in London, and are strictly Nett for Cash with order.

Packing is charged at cost price and is not returnable. Remittances should adequately cover cost of goods, packing and carriage. All goods are packed with the utmost care, and S.S. & Co. cannot hold themselves responsible for damage in transit.

**GUARANTEE.**—Whilst every endeavour is made to ensure the highest quality of workmanship and material in all our goods, we do not guarantee their efficiency or quality, but any reasonable complaint will always receive prompt attention.

## COLOUR PHOTOGRAPHY.

The past season has shown a steady growth in the number of workers of our process of Natural Colour Photography. Our process is generally admitted to be the simplest, most accurate and most easily worked method of natural colour photography ever introduced, and the very rapid increase in the number of photographers now working the process with admirable results, is the best possible testimony of its thorough practicability in the hands of both the professional and the amateur.

We cordially invite all interested in colour photography to investigate the merits of our system and where possible visit us at our Offices. New fields of usefulness for our process are constantly being discovered, and a personal interview will enable us to discuss the most suitable outfit for any particular class of work, and to show examples of the actual degree of perfection attained by our Patrons. We make this offer with the greater confidence inasmuch as we know that our system is not the tentative product of a new firm, untried, crude in manufacture and defective in detail, but a system improved at every step of the various stages through which it has passed, and having been in constant use by ourselves we are able to give the best of all advice—advice the result of practical experience. For it must be remembered that the general principles of trichromatic photography are old and were justly held in dispute as crude, until we applied accurate measurements to all the details of the process. Now, anyone with even a slight knowledge of ordinary photography, can at once secure not only exceedingly beautiful and artistic pictures but a faithful reproduction of the colours seen on the focussing glass of the camera.

Lectures, illustrated by slides made by our process have been delivered by eminent lecturers, not only in England but in all the principal cities of the world. One notable lecture was that upon early miniatures delivered by Mr. Richard Holmes, C.V.O., Royal Librarian, before their Majesties and the Court, at Windsor Castle in May last. This lecture was illustrated by natural colour slides of 25 of the early miniatures in His Majesty's collection, including the works of Holbein, Janet, Samuel Cooper, Oliver, Hoskins, Hilliard and Cosway.

After the examination of the original miniatures the reproductions were projected upon a screen enlarging the portraits to the size of life, and we believe this was the first occasion upon which not merely a single example but a whole series of reproductions of works by well-known masters have been directly compared with the originals. This series of slides were also shown by Mr. Holmes before the Society of Arts, and the "TIMES" art critic on the following day describes the exhibit as follows:—

"EARLY MINIATURES.—Last evening, at the Society of Arts, an illustrated lecture on 'Early Painting in Miniature' was given by Mr. R. R. Holmes, C.V.O., Windsor Librarian. Sir William Abney, F.R.S., presided, and there was a large attendance. The lecturer briefly characterised the chief miniature painters working in England from the time of Holbein to that of Cosway; but the chief feature of the evening was the remarkable series of lime-light illustrations, from 'three-colour' photographs made from the original miniatures in the Royal Library, and enlarged to life-size. They were taken by the Sanger-Shepherd method, and though a few examples had failed and were not therefore shown by Mr. Holmes, the rest were little short of marvellous. Not only every line and shadow of the miniature had been caught and reproduced, but every tint and shade of colour; so that the perfect miniatures came out perfect and those that were flawed or faded appeared as such. The famous 'Mary Queen of Scots,' by Francois Clouet; the full length 'Sir Philip Sidney,' by Isaac Oliver; the same painter's 'thumb-nail' portrait of himself; and the 'Monmouth' and 'Monk' of Samuel Cooper, the greatest of all miniaturists, were especially successful, and their appearance on the screen was warmly cheered. The triumph of the new process was demonstrated; henceforth it ought to be possible, by proceeding with care equal to that exercised by Mr. Holmes and the photographers, to make absolutely exact facsimiles, enlargements, or reductions of any paintings, large and small. Incidentally, too, Mr. Holmes proved the truth of a saying of Horace Walpole, who wrote, 'If a glass could expand Cooper's miniatures to the size of Vandyke's, they would appear to have been painted to that proportion.' Thrown in colour on the screen, they fairly rivalled Vandyke's pictures."

Lectures illustrated with slides made by our process have also been given by eminent lecturers before most of the leading Scientific Societies, including The Royal Society, The Royal Institution, The Society of Arts, The Royal Microscopical Society, The British Medical Association, &c., and throughout the country. In some instances the slides were made entirely by the lecturers and in others by ourselves.

With such accurate work constantly in progress, we are naturally at any time able to shew our clients the most recent improvements in methods of working and apparatus for our process.

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SANGER-SHEPHERD & Co.,



## COLOUR PHOTOGRAPHY. Outline of the Process.

**The three colour record negatives** are all taken upon one brand of plate, the Sanger-Shepherd Colour Plate, and can be made in any ordinary camera fitted with a mount to slip on the front of the lens, and provided<sup>1</sup> with a set of Sanger-Shepherd Colour Filters, using the ordinary dark slides to hold the three plates. In the Repeating Backs, all three negatives are taken on one plate.

**The exposures** through the Colour Filters will, naturally, be found a little longer than for ordinary photography. For instance, with a lens working at F/6 in a good studio light, the red filter would require about one second, the green two seconds, and the blue-violet two seconds exposure, with our rapid series of Colour Plates.

**The plates are developed** in the usual way, preferably with metol. The negatives must be clear and soft, full of detail and gradation; the first exposure should always include some white object, which, if the ratio of exposure is correct, will be represented by identical densities in all three negatives,

**Printing the Positives.** We prefer to make the greenish-blue print by making a black Lantern Slide from the red filter negative and converting the black silver image into a transparent greenish-blue image, by treatment with our greenish-blue Converting Solution and the pink and yellow prints upon a strip of film printed and developed together.

**The Special Film.** The positives from the green and blue-violet filter negatives are printed upon a **special** celluloid film\* coated with gelatine containing bromide of silver, sensitised by immersion in the sensitising bath for three minutes and dried in the dark room. The film is also supplied sensitised ready for use, and by the aid of our special calcium storage case will remain in good soluble condition for at least three months—a very great convenience for busy workers.

**The prints are made upon the film** by printing through the celluloid—the celluloid side being placed in contact with the film side of the negative and exposed to daylight until, on examination in weak light, all the details are visible on the film as a brownish-yellow print, very similar in appearance to an undeveloped platinotype print. The printed film is immersed in warm water, and in a few minutes the unaltered gelatine dissolves away, leaving a perfect white image full of detail attached to the celluloid base. The print is next fixed in ordinary clean hypo-sulphite of soda solution until the white bromide of silver dissolves, leaving a transparent, low relief in clear gelatine. Wash in water for 10 minutes and the prints are ready for staining up.

**Staining the Film.** The dye solutions are supplied in concentrated form and to make the staining baths merely require diluting with four or five times their bulk in water.

The print from the green filter negative is stained up in the pink bath, and the print from the blue-violet filter negative is stained up in the yellow bath—the staining being stopped as soon as the two prints, when held over the greenish-blue positive, give neutral tints in the grey shadows of the picture. Should one of the positives be accidentally overstained it may easily be reduced by merely soaking in clean water.

**Mounting the Positives.** After drying, the films are mounted in superposition on the blue print slide, and secured in position by binding strips; a mask and cover glass applied in the usual manner completing the picture. Lantern slides are, however, much improved in brilliancy if the separate films are mounted in optical contact with Canada Balsam, and in all but our cheapest set we include the apparatus and materials for this refinement.

\*The advantages of using our accurately adjusted filters and printing colours are obvious to all, but the evil of the use of imitations of our films is less obvious, as the worst defects of the imitations do not appear until some weeks after the slides are finished.

## TRICHROMATIC LIGHT FILTERS.

It is unfortunately true that some sort of coloured result can be obtained with inaccurate Colour Filters, but results of the delicacy and accuracy of colouring we are able to show, were unknown until we introduced our method of working to actual measurement.

**A Quality** (Medal Royal Photographic Society, 1899). The absorption of each Filter is adjusted by an improved form of Sir William Abney's Colour Sensitometer. Each set of Filters are tested during the course of manufacture and immediately before leaving our Factory for uniformity of focus and freedom from astigmatism, obviously work entailing expense.

**B Quality** are similar in appearance to the above, but made with a less perfect quality of worked glass, and with a slightly larger margin of error in adjustment.

**C Quality** are made with selected patent plate, and are recommended where price is of importance.

### PRICE PER SET OF THREE.

			1½	2	2½	3½	4-in.
<b>A Square</b>	...	...	50/-	63/-	80/-	105/-	168/-
<b>Circular</b>	...	...	63/-	70/-	90/-	120/-	200/-
<b>B Square</b>	...	...	20/-	25/-	35/-	50/-	...
<b>Circular</b>	...	...	25/-	30/-	40/-	55/-	...
<b>C Square only</b>	...	...	15/-	20/-	30/-	40/-	...

## Suggested Outfits for Colour Photography.

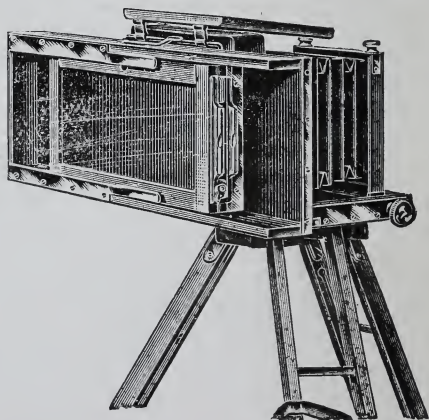
**Inexpensive Outfit, Type A.** From the above list it will be seen that accurately measured Coloured Filters of large size are, like Lenses, naturally expensive to produce, but fortunately small filters 1½-in. sq. are sufficient to intercept all the light rays passing through most ¼ plate lenses. A set of these to be placed on the lens hood of purchaser's own camera (together with the special plates, developer, films, and dye solutions) is offered as a trial outfit at 25/- This price includes a Filter Fitting, **A Type**

**B Type** fitting, or slide-past holder as here shewn can be substituted, for difference in price.



**Best Outfit, Type D.** Excellent Colour Photographs may be obtained with the above Outfit, but for general work, Landscapes in changing light, Portraiture or Photomicrography where rapid exposures in succession are necessary the Repeating Back with Colour Filters is recommended as the best all round appliance.

It may be attached to any ¼, ½ or whole plate camera or glass plate Kodak by means of a panel cut to correspond and interchangeable with the ordinary dark slide. This does not in any way interfere with the use of the camera for ordinary work. The three Colour Filters are held in a frame, clipped in front of the Double Dark Slide which carries the two plates, each large enough to record the three negatives side by side, when the slide is pushed past the opening in the outer case. Further details of these will be found specified overleaf (see type D). With this Outfit even a beginner will secure three-colour negatives with the ease and certainty of an ordinary photograph.



Repeating Back, as above, Plate 8 x 3 1/3 ... 90/-  
Developing and Printing Outfit ... 84/-

Plate 9½ x 4½ ... 150/-  
" " ... 95/-

Complete Outfit for Transparencies ...

... 174/-

245/-



**S.S. & Co's Repeating Backs** can be readily attached to almost any form of Camera which takes dark slides for glass plates at back, and nearly all good makes of achromatic lenses are suitable; but the following list of Cameras, made or stocked by us, will form a guide to purchasers of instruments which may be used as ordinary Cameras, and yet are readily adapted for three-colour work. Though not necessary, it is often preferred to attach the backs to the next size larger Camera (*i.e.*,  $\frac{1}{2}$ -plate back to  $5 \times 4$  Camera, and so on). The figure is from a photograph of our latest model, and shews repeating back, colour filters, double dark slide, and the focussing glass.

## CAMERAS SUITABLE FOR THREE COLOUR WORK.

**Sanger-Shepherd Folding Camera.** Best selected polished mahogany, special rigid construction, without unnecessary bulk, rising front, swing back, long extension. The half-plate size and larger, have extra wide front panel, which takes either a large portrait lens, or a pair of stereo lenses. See illustrations below.

Price of Cameras only (without lens or slides)	...	...	$1\frac{1}{2} \times 3\frac{1}{2}$	$5 \times 4$	$6\frac{1}{2} \times 4\frac{3}{4}$	$6\frac{1}{2} \times 6\frac{1}{2}$
Polished mahogany Double Dark Slides, for ordinary photographs. each	...	...	130/-	...	180/-	300/-
Above Camera, with Bausch & Lomb R.R. lens and Unicum shutter	...	...	15/-	...	21/-	...
Ditto, with Ross-Zeiss "Unar" lens, f. 4.5	...	...	162/6	...	222/6	...
Ditto, with Dallmeyer 2 B Rapid Portrait lens, f. 3	...	...	245/-	...	365/-	660/-
<b>Sanderson Camera</b> , leather covered, Camera only	...	...	105/-	125/-	177/6	290/-
Ditto, with Dallmeyer lens, Series II, f. 6 and shutter	...	...	237/6	290/-	380/-	...
<b>Glass Plate Kodak</b> , leather covered, R.R. lens	...	...	100/-	110/-	...	...
<b>Cartridge Kodak</b> . Plagistmat lens and shutter	...	...	195/-	235/-	...	...

**Sanger-Shepherd Box Form Camera**, complete with R.B. filters and lens,  $8 \times 3 \frac{1}{3}$  147/- Stereoscopic, from 300/-.

## SANGER-SHEPHERD OUTFITS FOR COLOUR PHOTOGRAPHY.

TYPE.	SPECIFICATIONS.	Lantern Slides from 4-plate Negs. 1 1/8 Filters.	4 1/2 x 3 1/2 1 1/8 Filters.	5 x 4 2-in. Filters.	6 1/2 x 4 1/2 2-in. Filters.	8 1/2 x 6 1/2 2 1/2 in. Filters
AC	<b>Minimum Outfit, Filters on Lens, using own Dark Slides.</b> Set of C quality Sanger-Shepherd Colour Filters, and Fitting for Lens of Purchaser's own Glass-plate Camera, 12 S Colour Plates, 12 Positive Plates, 12 Special Films, Developer, Sensitiser, 3 Dye Solutions, complete instructions ... .. Ditto, but with B quality Filters for Lens† ... .. Ditto, but with A quality Filters for Lens† ... ..					...
AB		25/-	25/6	34/6	42/6	...
AA		30/-	30/6	39/6	47/6	62/6
BC	<b>Complete Outfit, Filters on Lens, using own Dark Slides.</b> Set of C quality Sanger-Shepherd Colour Filters, and Fitting for Lens of Purchaser's own Glass-plate Camera, 12 S Colour Plates, 12 Positive Plates, 12 Special Films, Developer, Sensitiser, 3 Dye Solutions, Celluloid Plate Enamel, 6 Adjusting Clips, 12 Cover Glasses, Slide Binders, 12 Film Studs, 2 Filter Bags, Ratio Negative, Natural Colour Slide, hinged in Adjustment, Balsam and Sealing Materials and complete working instructions. Ditto, but with B quality Filters for Lens† ... .. Ditto, but with A quality Filters for Lens† ... ..	60/-	60/6	77/6	85/6	107/6
BB		50/-	50/6	60/-	71/-	96/6
BA		55/-	55/6	65/-	76/-	141/6
CC	<b>Complete Repeating Back Outfit, with Filters on Lens.</b> Sanger-Shepherd Repeating Back, fitted with Single Dark Slide and Focussing Glass, with set of C quality Colour Filters and Fitting for Lens of Purchaser's own Glass-plate Camera, S S Colour Plates for 12 Sets of Negatives, 12 Positive Plates, 12 Special Films, Developer, Sensitiser, 3 Dye Solutions, Celluloid Plate Enamel, 6 Adjusting Clips, 12 Cover Glasses, Slide Binders, 12 Film Studs, 2 Filter Bags, Ratio Negative, Transparency in Adjustment, Balsam and Sealing Materials and complete working instructions ... .. Ditto, but with B quality Filters for Lens† ... .. Ditto, but with A quality Filters for Lens† ... .. Repeating Back, as above, only ... .. Fitting Panel to Rept. Backs, to fit Purchaser's own Camera ... .. Extra Dark Slides for Single Repeating Backs ... ..	91/6 96/6 126/6 30/- 5/- 10/6	107/6 112/6 142/6 40/- 7/6 15/-	...	...	...
CA				...	...	240/- 265/- 102/- 10/- 40/-



TYPE.	QUICK CHANGE, ONE PLATE LATEST PATTERN OUTFITS (Recommended).																		
D	<b>Complete Outfit, Filters in Repeating Back.</b> Sanger-Shepherd latest pattern Repeating Back, polished mahogany case with G. S. springs, ensuring easy rapid change without vibration. New Pattern Double Dark Slide, Focussing Glass and Frame containing Best Quality Colour Filters full size of Negative, the whole recommended as the best appliance for obtaining Three-Colour Negatives, with short exposures, for Portraiture, etc. ...																		
	<b>Complete Developing and Printing Outfit,</b> comprising S.S. Colour Plates for 12 sets of Negatives, 12 Positive Plates, 12 Special Films, 3 Dye Solutions, Developer, Sensitiser, Celluloid Enamel, Ratio Negative, Triple Developing Dish, Triple Printing Frame, Card Negative Box, Calcium Film Case, 12 Adjusting Clips, 12 Cover Glasses, 12 Film Pins, Binders, Filter Bags, Actinometer, Specimen Negative, Transparency in adjustment, Specimen Films, Balsam Sealing Appliances, and Complete Working Instructions ...																		
	<b>Complete Outfit,</b> For attachment to purchaser's own Camera ...																		
	<b>Extras:</b> Double Dark Slides, each ... Solid Leather Carrying Case for Repeating Back ...																		
	<b>Patent Paper Process Outfit</b> (including limited license) ... absolute minimum of materials required, deduct from price of D outfit ...																		
	LANTERN SLIDE ONE PLATE 8 x 3 1/3 4 1/4 x 3 1/4 9 1/4 x 4 1/4 ONE PLATE 5 x 4 12 x 5 6 x 5 15 x 6 ONE PLATE 6 1/4 x 4 1/4 THREE PLATES 8 1/2 x 6 1/2 THREE PLATES 8 1/2 x 6 1/2 STEREO ONE PLATE 8 1/2 x 6 1/2	90/-	150/-	250/-	310/-	370/-	430/-	190/-	84/-	95/-	110/-	130/-	110/-	140/-	100/-	290/-	13/- 35/-	30/-	64/-
		174/-	245/-	360/-	440/-	480/-	570/-	10/6 21/-	35/- 25/-	45/- 35/-	50/- 50/-	55/- 55/-	100/- ..	40/-	76 1/5				

For Prices of suitable Cameras and Lenses see Camera List,

† For Specifications of Light Filters see Three Colour Filter List,

## SPECIAL APPARATUS AND MATERIALS.

	$3\frac{1}{2} \times 3\frac{1}{2}$ and $4\frac{1}{2} \times 3\frac{1}{2}$	$5 \times 4$	$6\frac{1}{2} \times 4\frac{1}{2}$	$8\frac{1}{2} \times 6\frac{1}{2}$	$8 \times 3\frac{1}{2}$	$9\frac{1}{2} \times 4\frac{1}{2}$
S.S. Colour Plates, unbacked (ordinary series, for extra rapid see pp. 23) per doz.	1/6	2/6	3/8	6/6	4/-	4/6
S.S. Colour Plates, specially backed "	1/10	3/-	4/5	7/7	4/9	5/6
Black Tone Plates for Blue Positive "	1/-	1/7	2/3	4/3	...	...
Special Films, per doz.	$3\frac{1}{2}$ sq. 2/2	2/10	3/3	5/10	9/-	9/6
Price for double size $6\frac{1}{2} \times 3\frac{1}{2}$	4/3	5/8	6/6	...	...	...
Calcium Storage Case for Films ...	...	...	...	...	...	...
*Takes double size ... each	*3/6	*6/-	3/6	6/-	...	...
Triple Developing Dishes (glass bottomed) ...	5/-	7/6	8/6	12/6	4/-	5/-
Deep Granatine Dishes, size for ... each	-8	-9	1/-	1/5	...	...
Semi-Porcelain Dishes, size for ... "	-8	-9	-10	1/2	...	...
Special Triple Printing Frames, plate glass front	...	...	...	...	7/6	7/6
Best Cover Glasses, per doz. $3\frac{1}{2}$ sq.	-9	1/-	...	2/-	3/-	...
Cloth Card Negative Boxes ... each	-5	-5	-6	-8	-8	1/-
*Minus Red Converting Solution ...	...	...	per bottle	1/- and	1/6	...
*Minus Green Staining Solution ...	...	...	...	1/9	...	3/6
*Minus Blue Staining Solution ...	...	...	...	1/9	...	3/6
Green Blue Dye Alternative for Relief Films ...	...	...	...	1/9	...	3/6
Patent Cyan Blue Alternative for Relief Films ...	...	...	...	1/-	...	1/6
*Special Celluloid Enamel for Plates ...	...	...	...	1/9	...	3/6
*Special Film Varnish ...	...	...	...	1/3	...	2/6
*Special Canada Balsam for Sealing ...	...	...	...	1/6	...	2/6
Special Sensitising Salts for Films ...	...	...	...	-6	...	-9
Steel Clips for registering ...	...	...	...	per dozen	1/-	...
Special Spring Clips for Sealing ...	...	...	...	each	-9	...
Sanger Shepherd Film Pins ...	...	...	...	per box	1/-	...
Special Slide Binding Strips ...	...	...	...	...	1/4	...
Filter Bags for Dye Solutions ...	...	...	...	per dozen	2/-	...
Brass Stand and Beaker for Balsam Heating ...	...	...	...	...	2/-	...
Gas Heater for ditto ...	...	...	...	...	2/6	...
Wynne Meter for ascertaining Negative Exposures ...	...	...	...	...	7/6	...
Special Non-magnetic Stop Watch for timing Exposures ...	...	...	...	...	17/6	...
Laboratory Minute Recorder, beating $1/5$ sec., Keyless, Best Make, $2\frac{1}{2}$ -in. dial	...	...	...	...	70/-	...
Special Developing Clock and Gong for dark room, 4-in. dial	...	...	...	...	10/6	...
Fraction Tint Actinometer for timing Printing of Films ...	...	...	...	...	5/-	...
Spectrum Safe Light in Lantern, $10 \times 8$ , for Electric Light	...	...	...	...	12/6	...
" with Cord, Lamp Holder and Adapter ...	...	...	...	...	17/9	...
" but fitted for Gas ...	...	...	...	...	12/6	...
" but fitted for Oil or Candle ...	...	...	...	...	13/6	...
Spectrum or G. F. O. Glasses only ...	...	...	$8\frac{1}{2} \times 6\frac{1}{2}$	$4/6$ , $10 \times 8$	5/6	...
Ditto, in Holiday Candle Lamp (Glass only $3/6$ ) ...	...	...	...	...	14/-	...
Sanger Shepherd Universal Developer, box of 1, 2 and 3	...	...	...	...	2/1	...
Large Tubes of No. 1 (20 oz.) ...	...	per doz.	15/6	per tube	1/4	...
Small Tubes of No. 1 (6 oz.) ...	...	...	5/6	...	-6	...
Large Tubes of Nos. 2 and 3 ...	...	...	8/6	...	-9	...
1 lb. Tin of Sodium Sulphite (Anhydrous) S. S. & Co.'s	...	...	...	...	1/9	...
1 lb. Tin of Sodium Carbonate (Anhydrous) S. S. & Co.'s	...	...	...	...	-9	...
Ratio Negative of Colour Filters ...	...	...	...	...	2/6	...
Specimen Set of Colour Negatives showing Density and Style	...	...	...	...	10/6	...
Specimen Set of Three Prints, Stained in Adjustment	...	...	...	...	10/6	...
Specimen Properly Developed Film, 1/-	...	...	Ditto after fixing	...	1/-	...
Specimen Green-Blue, Pink or Yellow Positive	...	...	each	...	2/-	...
Book of Working Instructions ...	...	...	...	...	2/-	...
Finished Lantern Slides, Sealed (from Stock)	...	...	...	...	10/6	...
Finished Stereoscopic Slides	...	...	...	...	15/-	...

\*These Stains, Enamel, Varnish and Balsam are essential features of our Process and substitution of others will give inaccurate colouring and non-permanence of results.

Packing, Postage or Carriage extra.

SANGER-SHEPHERD & Co.,

## SPECIAL APPARATUS AND MATERIALS.

Tin Cases for Foreign Postage	$\frac{1}{2}$ -pl. -/8, $\frac{1}{4}$ -pl. -/10, 8 x 3 $\frac{1}{3}$ -/9, 9 $\frac{1}{2}$ x 4 $\frac{1}{2}$ 1/-
Thick Japanned ditto (for dark room)	1/-, 1/9, 2/3, 3/-
Graduated Measures, marked oz. and c/c.	2 oz. -/6, 10 oz. 1/-, 20 oz. 1/4, 40 oz. 2/6
Glass Funnels, fluted	4 in. -/4, 6 in. -/7, 8 in. -/10
Printed Concentric Circles, $\frac{5}{8}$ in., for testing lenses	... per dozen 2/6
Japanese Joseph Paper, for cleaning glass	... half ream 3/-, quire -/6
Amadu, for cleaning lenses or filters	... per piece -/6 and 1/-
Lantern Cover Glass Photographic Masks, assorted	... per dozen 3/6
Lecturer's Lantern Slide Boxes, very superior	... 16 in. 7/6, 8 in. 5/-
Waterproof Cloth Cases for same	... 7/6, 5/6
Black Table Viewing Frames	$\frac{1}{2}$ -pl. 5/6, $\frac{1}{4}$ -pl. 7/6, whole plate, 10/6
Polished Mahogany Exhibition Frames	8 slides, 10/6, 15 slides, 15/-
Ditto, Opal Glass Reflector, Brass Hinged Strut	20/-, 30/-
<b>Stereoscopes</b> , polished mahogany, achromatic lenses, for $5\frac{1}{2}$ x $2\frac{1}{2}$	... 15/-
Ditto, superior, lacquered mounts, ground glass screen	" ... 21/-
Ditto, larger lenses, rackwork focussing	" ... 27/6
Loaded Brass Base and Pillar to above, extra	" ... 15/-
Ditto, adjustable, with loaded brass base, for $6\frac{3}{4}$ x $3\frac{1}{4}$	" ... 50/-
Victor Selb model, for transparencies or paper prints, $6\frac{3}{4}$ x $3\frac{1}{4}$ , every part adjustable, the finest instrument made of the kind. with brass loaded base	... 63/-

## SAFE LIGHTS FOR DARK-ROOM ILLUMINATION.

### "Spectrum"

for Red Sensitive Plates.

### "Ruby"

for Green and Yellow ditto.

### "G.F.O." (Green)

for ordinary and Bromides.

$8\frac{1}{2}$  x  $6\frac{1}{2}$  4/6 10 x 8 5/6

Any size cut to order.

**LANTERNS** (10 x 8)  
with one Safelight for

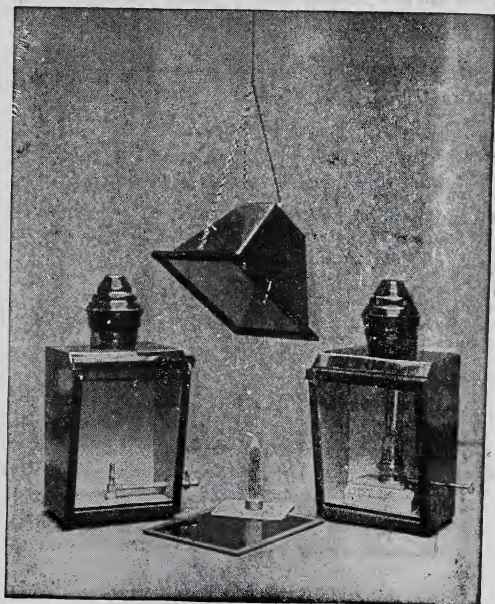
**Gas** 12/6

**Oil or Candle** 13/6

**Electric Light** 12/6

Holiday Candle Lamp and  
Spectrum Safe Light 14/-

New Model of Dark Room Lamp for 10 x 8 Safe Lights. This model is the outcome of the demand for a better made lamp for permanent use than our cheap model. The new model is made of stout plate, well japanned inside and out, and the chimney is made of Russian iron. The light trap where the safe lights are inserted is also an improved form and quite light-tight even with safe lights of varying thickness which do not fill the grooves. Price, with one Spectrum or G.F.O. Safe Light, for OIL or GAS, 17/6.



## COLOUR PHOTOGRAPHY UPON PAPER.

### Paper Prints by the Carbon Process.

The carbon process in the oldest method of printing upon paper from three colour record negatives. The carbon tissues are supplied coated upon paper in the usual manner and are sensitised in a 2 per cent. bichromate bath, squeegeed upon prepared celluloid and allowed to dry. Printing takes place through the celluloid as described on page 1321, and the prints are developed in warm water. The weak point of this method lies in the fact that the pigment is locked up in the gelatine and the only power of adjustment is by washing down the print as a whole by long soaking in warm water. The fact that the three colours require different times of exposure also complicates the method. When three satisfactory prints are obtained the yellow print is mounted with a solution of gelatine on a sheet of non-stretching paper, dried, and the celluloid temporary support stripped off. The pink and cyan blue prints are successively transferred in the same way to complete the picture. This method gives good results from suitable negatives, but it is not suited to all classes of subjects; some examples shown at the Royal Photographic Society's Exhibition in 1902, are as perfect as when first printed, and as the pigments are tested colours they should prove quite permanent.

### Price List Three Colour Pigment Paper.

The Tissues are put up in packets containing four sheets of each of the colours, cyan blue, pink and yellow, and four sheets of final support.

Size. Tissue Per Packet.	$\frac{1}{2}$	$\frac{1}{4}$	1	10 x 8	12 x 10
	2/9	1/6	2/9	3/8	5/-

### Pigment Stripping Films for Trichromatic Photography

These are thin celluloid films of German manufacture, coated with pigmented gelatine. They require to be sensitised in a bichromate bath, and are printed, developed and transferred as described above.

Size Price	$4\frac{1}{2} \times 3\frac{1}{2}$	$5 \times 4$	$6\frac{1}{2} \times 4\frac{1}{2}$	$8\frac{1}{2} \times 6\frac{1}{2}$	10 x 8	12 x 10	15 x 12
	2/-	3/-	4/6	8/-	12/-	18/-	26/6

The Films are put up in packets containing four of each of the colours, cyan blue, pink and yellow and four sheets of mounting paper.

### PRICES.

### Sanger-Shepherd & Co's One Exposure Stripping Films for Paper Work

These films are similar to our regular Lantern Slide Transparency Film, but on a thinner celluloid base, prepared for stripping—three prints are made from the three negatives, and as the temporary pigment (bromide of silver) is the same in all the prints, they can be exposed and developed together. After being developed the prints are fixed and stained up in the colour baths as described on page 1321, and after drying transferred to paper by the method described above. This method has great advantages over the use of three coloured pigment tissue. The gelatine film is alike for all three negatives and the correct scale of gradation is preserved, a desideratum impossible with separate films containing different coloured pigments.

The ease of adjustment in the staining up process enables results of the very greatest accuracy to be obtained, and paper prints by this method will stand comparison even with prints by our Lantern slide process from the same negatives.

The films are put up in packets of one dozen, together with four sheets of mounting paper.

Size Price	$4\frac{1}{2} \times 3\frac{1}{2}$	$5 \times 4$	$6\frac{1}{2} \times 4\frac{1}{2}$	$8\frac{1}{2} \times 6\frac{1}{2}$	10 x 8
	2/3	3/3	4/9	8/9	12/6

Concentrated Staining Baths, cyan blue, pink and yellow—  
Small bottles 5/3, large bottles 8/6, per set of three.

SANGER-SHEPHERD & Co.,



**Sanger-Shepherd & Co's. Patent Paper Process.**

SANGER-SHEPHERD &amp; BARTLETT'S PATENTS.

This process is based upon the discovery that if a gelatine relief, stained with a suitable dye-stuff, in squeezed in contact with a damp sheet of gelatinised paper, the whole of the colouring matter will leave the hardened gelatine relief and transfer to the softer gelatine coating upon the paper. Once the principle of this important discovery is grasped, it is easy to see how perfect prints upon paper may be made from trichromatic negatives, for it is only necessary to apply the three stained reliefs successively to the same sheet of damp gelatinised paper in order to secure a colour photograph, consisting of nothing but the colouring matter locked up in a single film of gelatine upon the paper base.

The Patent Flexible Printing Plates used in this process, consist of a stout celluloid base coated with a similar emulsion to our ordinary transparency process films, but containing considerably more bromide of silver in order to keep the relief as low as possible.

**WARNING.** The use of a gelatine relief or Carbon Print soaked in a dye-stuff as a printing surface is protected by Letters Patent, and warning is hereby given that any such use of a gelatine relief, except by our Licensees, renders the user or seller liable to an action for infringement.

Further Particulars and Copy of Licenses on application.

**Price List of Outfits and Renewals.**

	$4\frac{1}{2} \times 3\frac{1}{2}$	$6\frac{1}{2} \times 4\frac{1}{2}$	$8\frac{1}{2} \times 6\frac{1}{2}$
Outfits, including limited license ...	20/-	30/-	40/-
RENEWALS TO LICENSEES.			
Patent Flexible Printing Plates ... per doz.	3/-	6/-	10/6
For 3 prints, $8 \times 3 \frac{1}{3}$ 5/- per doz. $9\frac{1}{2} \times 4\frac{1}{2}$ 9/6 „			
Patent Gelatine Coated Paper ... „	1/-	2/-	3/9
Gelatine Coated Opaque White Celluloid ... „	2/6	5/6	10/-
Gelatine Coated Ground White Opals ... „	1/6	3/8	6/6
Thick Plate Glass Slabs (Polished Edges) for Printing ... each	1/-	1/9	2/6
Thin Polished Plate Glass Slabs for Glazing Prints „	-9	1/3	2/-
Fine Ground Glass Slabs for matting Prints „	-4	-6	1/-

Patent Water Colour Printing Inks, each, small bottle. 1/9, large bottle, 3/6

**A NEW ONE-PLATE ONE-EXPOSURE CAMERA.****Patents Applied For.**

A new one-exposure camera for colour photography. In this form of camera the three negatives are taken upon one plate, by one lens, at one exposure. The camera is very compact and portable, whilst the arrangements for the dividing of the image from one lens into three parts are particularly free from liability to derangement, and we can confidently recommend the new model for use both at home and abroad. The adjustment for varying sensitiveness of different batches of plates is accomplished by a novel form of diaphragm, so that the setting of the camera to ratio is merely a question of setting the diaphragm—no compensating screen being necessary. Three models are now ready:—

**No. 1.**—The smallest size is particularly intended for use as a cycle camera. It takes three negatives  $2\frac{1}{2} \times 2$ -in. on a single plate  $6\frac{1}{2} \times 2\frac{1}{2}$ -in. (half of a  $\frac{1}{2}$ -plate). The dark slides in this model are beautifully made in mahogany of the book pattern. The body is covered in black Persian morocco; fittings in black bronzed brass.

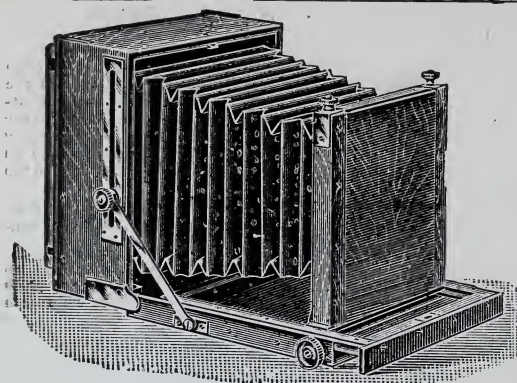
**No. 2.**—Takes a plate  $8 \times 3 \frac{1}{3}$ -in. the same size as our No. 1 repeating back; the dark slides are the same pattern and interchangeable with those in the No. 1 repeating back.

**No. 3.**—For stereoscopic pictures; takes the three stereoscopic pairs of images on an  $8 \times 5$ -in. plate.

These cameras open quite a new field for colour photography, as they enable beautiful pictures to be obtained even when movement occurs during the exposures, for as the movement occurs equally in all three negatives all irritating colour fringes are avoided, besides the greater facility in working, due to only one exposure being required.

Price from £25.

5. 6 & 7. GRAY'S INN PASSAGE, LONDON, W.C.



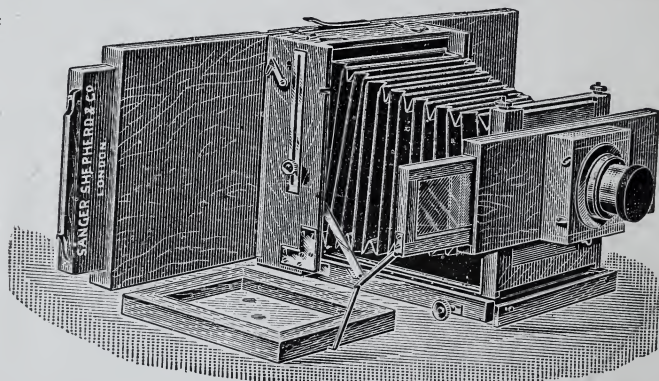
### Sanger-Shepherd Folding Camera.

Made entirely in our own factory, with selected seasoned, figured mahogany, panelled to give the greatest rigidity, for three colour work. Diagonal rack focusing; rising front panel; swing back. Extra long and rigid extension. The half-plate size and larger, have extra wide front panel, which takes either a large portrait lens, or a pair of stereo lenses.

#### Prices.

	$4\frac{1}{2} \times 3\frac{1}{2}$	$6\frac{1}{2} \times 4\frac{1}{2}$	$8\frac{1}{2} \times 6\frac{1}{2}$
Camera only (without lens or slides) ... ..	130/-	180/-	300/-
Ditto, with B. & L. R.R. lens and Unicum shutter	162/6	222/6	...
Ditto, with Ross-Zeiss "Unar" lens, f. 4.5 ...	245/-	365/-	660/-
Ditto, with Dallmeyer 2 B Rapid Portrait lens, f. 3	...	435/-	...
Double Dark Slides, best polished mahogany, each	15/-	21/-	...

### LARGE CAMERAS FOR THREE-COLOUR WORK.



Special rigid construction, with slide past holder for filters behind lens, and repeating back for plates. Best workmanship and materials throughout. Suitable for Picture Copying, Studio use, &c. Price with R.B. for  $8\frac{1}{2} \times 6\frac{1}{2}$ -in. plates, complete as illustrated (without lens), but with  $3\frac{1}{2}$  square Colour Filters £27 10s.

### Sanger-Shepherd Surveying Camera, New Model.

This consists of an outer case into which a book-form  $\frac{1}{2}$ -plate dark slide fits. The camera proper, provided with a fixed focus, special Dallmeyer lens, is contained within an outer case. The exposure is made by a sliding shutter in the front of the outer case. Two adjustable ground bulb levels are provided on two sides of the case for use with horizontal or vertical pictures, and the staff head levelling screws are accurately made—the frame being in aluminium bushed with gun metal. All the fittings, including the pinion head lie flush with the outer case. Price complete with special double dark slides, £35. Extra Double Dark Slides, 21/- each. Best solid-leather Government Pattern Carrying Case, with lock and knap-sack straps, lined velvet, £2.

# ORTHOCHROMATICS

It is well known that the relative brightness of the colours of an object as represented in an ordinary photograph is very different from the relative brightness or luminosity of the same colours as seen by the eye. This is due to the fact that all photographic plates, including the very best of the so-called orthochromatic brands, are enormously more sensitive to blue and violet than to red, yellow and green. To remedy this defect it is necessary to employ a compensating filter, so as to reduce the action of the blue and violet and thereby allow the red and green light to impress the plate in their correct proportions.

The ordinary worked yellow glass disc or iso screen of the dealers is almost useless for this purpose, as the colours available in "Pot Metal" glass are not suitable in absorption, and if sufficiently deep to allow the green and red to impress the plate cut out the blue-violet entirely. In addition to this defect they always contain a large amount of black, which merely increases exposure without any compensating advantage in colour rendering. All our filters are quite free from black, and give the maximum of orthochromatic effect for the minimum increase in exposure.

Different makers' brands of orthochromatic plates vary widely in their relative sensitiveness to colour, and in order to secure the best results it is absolutely necessary that the absorption of the light filter should be adjusted to exactly compensate for the difference between the relative brightness or luminosity of various colours as seen by the eye, and as photographed on the particular brand of plate employed.

The Sanger-Shepherd Colour Plate requires less correction and therefore shorter exposure than any other brand. We stock all sizes and varieties of filters for use with it, but by sacrificing speed we can supply filters adjusted to give precisely the same results with any brand of plate upon the market. We also carry stock adjusted for Imperial, Barnet, Wellington, Edwards, Lumiere and other makes of orthochromatic plates.

## Specifications of Sanger-Shepherd Ortho. Light Filters.

Giving the maximum of correction with the minimum of increase in exposure.

**Series A.**—"PERFECTUS." Renders all colour luminosities correctly. For photographing Paintings, Flowers, Landscape with near foreground, copying, &c. Increase in exposure with S.S. & Co.'s Series B Plate about 7 times. "SYLVUS"—For Landscape and Portrait work. Increase in exposure  $1\frac{1}{2}$  to twice.

**Series B.** These filters are similar to the "A" series, but instead of being adjusted so as to render the red, green and blue luminosities correctly, they are adjusted to give the best possible correction for a given increase in exposure. They are made to require 3, 5, 10 or 15 times the normal exposure.

**Series C.** These are permanently sealed filters of high luminosity and great transparency, i.e., pure colours without admixture of black. They are much superior to the ordinary worked yellow glass, giving far more orthochromatic effect for the relative increase in exposure, but lack the extreme accuracy and perfection of manufacture of our A and B series.



**Sets of Light Filters,  
in Special Case, Morocco  
Covered, Velvet Lined for  
Pocket.**

**x 5 times.** For cloud effects and snapshots.

**x 10 times** } For Landscapes and  
**Sylvus** } Portraiture.

**Perfectus.** For correctly copying all colored objects.

Sets in case as illustrated, for Lenses up to  $1\frac{1}{2}$ -in. diameter, 45/-.



# Price List of Sanger-Shepherd Orthochromatic Light Filters.

This List cancels all previous quotations. Intermediate circular sizes will be charged at the price of the next size larger on the list. Filters can be supplied accurately paired for Steroscopic work at an extra charge of 2/- per pair.

Series	A.—"PERFECTUS," Adjusted to render all luminosities correctly.	up to	5-in.							
			1 1/8-in.	1 1/2-in.	2-in.	2 1/2-in.	3 1/2-in.	4-in.	4 1/2-in.	5-in.
Series A.	"SYLVUS." To render blue and green luminosities correctly, leaving the red luminosities uncorrected.	Square	10/-	12/6	12/6	18/6	25/-	40/-	45/-	45/-
			12/6	12/6	15/-	20/-	30/-	50/-	55/-	55/-
Series B.	Adjusted to increase exposure 3, 5, 10 or 15 times. Best possible results for the indicated increase in exposure.	Square	7/6	7/6	8/6	12/6	15/-	20/-	30/-	30/-
			8/6	8/6	10/-	15/-	20/-	30/-	35/-	35/-
Series C.	An excellent series of Filters, where price is a consideration	Square	2/6	3/-	4/6	7/6	10/6	15/-	20/-	25/-
			3/6	4/6	7/6	10/6	15/-	20/-	25/-	25/-
Filter Fittings—	Best black bronzed spring cells, to slip on the front or back of the Lens, stocked in all sizes from 1/2-in. to 5-in., rising by 1/32 of an inch, fig. 3, page 1313	Circular	1/6	2/-	2/6	3/-	3/-	4/-	5/-	5/-
			2/-	2/6	3/-	3/6	3/6	4/6	5/6	5/6
Ditto, but lined with Velvet or Billiard Cloth	Cells to screw into front or back combinations, fig. 4, page 1313, about 1 1/2 X 2, 2 X 2 1/2, 2 1/2 X 3 1/4 X 4.	Circular	1/6	2/-	2/6	3/-	3/-	4/-	5/-	5/-
			2/-	2/6	3/-	3/6	3/6	4/6	5/6	5/6
Best velvet lined, Morocco Leather covered case, with spring snap, fig. 5, page 1313	Fittings to take Square Filters—	Circular	1/6	2/-	2/6	3/-	3/-	4/-	5/-	5/-
			2/-	2/6	3/-	3/6	3/6	4/6	5/6	5/6
Pattern A. For screwing on the Front of a Roller Blind Shutter (page 1313)	B. With Split Tube at the back to slip on front or back of Lens	Circular	1/6	2/-	2/6	3/-	3/-	4/-	5/-	5/-
			2/-	2/6	3/-	3/6	3/6	4/6	5/6	5/6

**Graduated Light Filters—**  
These series are intended solely for open **Landscape** and **Sea and Cloud** effects. They are made in oblong form and graduated so as to allow of less exposure to the sky than to the foreground of the subject. They are invaluable in securing perfect representations of clouds of printable density with correct exposure to the foreground in the same negative.

The oblong form enable the line of **change of gradation** to be adjusted to the position of the horizon in the picture

Adjustable Fitting for ditto—  
Pattern **A**: To screw on Front of Roller Blind Shutter ...  
" **B**: With Split Tube at back to slip on front of Lens ...

**S.S.K.** Filters adjusted for Kodak N.C. Films or Kodoid Plates 5 and 10 times in black bronzed cells to fit Kodak Cameras, up to 1 1/4-in. diameter, 6/- each. Prices for larger sizes as series B.

In ordering, state Number and Name of Camera, and make of Lens.



The Perfectus and Sylvus filters used with our new Colour Plate give the same results as the filters we formerly made under the names of "Absolutus" and "Gilvus," adjusted for use with the Spectrum Plate, but owing to the very much greater sensitiveness of our new plate the increase in exposure required is much less. The Perfectus used with our new colour plate requires 7 times, and the Sylvus only  $1\frac{1}{2}$  times the normal exposure without a filter. We can adjust these filters in order to give precisely the same result with any brand of Orthochromatic Plate, but such adjustment will require much longer exposure.

## Caps, Cells, Fittings and Cases for Light Filters.

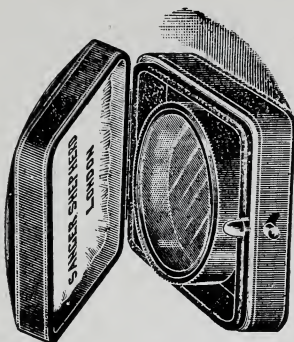
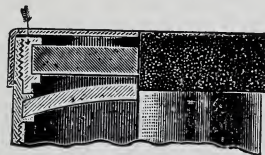
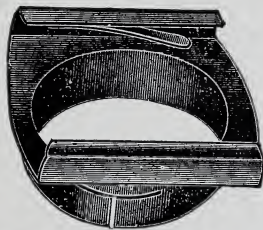
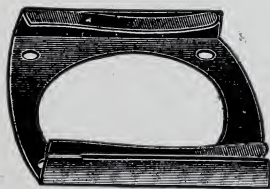


Fig. 1-A.

Fig. 2-B.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 1.—For Square Filters to screw inside camera or on the front of Roller Blind Shutters.

Fig. 2.—Ditto, but with split tube at the back to slip on lens tube.

Fig. 3.—Black bronzed spring cell to slip on front or back of lens tube.

Fig. 4.—Black bronzed cell to screw in back or front combination of lens.

Fig. 5.—Velvet lined Morocco leather covered case, with spring snap.

Many other kinds stocked. Any kind of fitting, adapter or case made to order in our own workshops on short notice.

## How to Order.

State brand of plate used. Series and size of filter.

For the size of black bronzed cells a strip of hard writing paper may be cut to exactly meet round the part of the lens on which the filter is to fit, but it is always best to send the lens whenever possible. For cells to screw into one of the combinations we must have the lens for fitting. All fittings are made in our own factory, and when necessary the lens can be returned the same day as received.

## FILTERS FOR PHOTO-MICROGRAPHY.

"A" line Red, "B to I" line Red. Light and Dark Orange. Light, Medium, and Dark Yellow. Pure Monochromatic Green. (Four varieties passing narrow bands). Compound Signal Green. Pure Monochromatic Blue,  $1\frac{1}{4}$ -in. sq. 5/-; 2-in. sq. 7/6 each. The green filters are especially recommended for improving the definition of imperfectly corrected objectives.

**Special Offer.** Set of three most useful Filters for Photo-Micrography. Orange, Green and Blue,  $1\frac{1}{4}$ -in. sq. 14/-; 2-in. sq. 21/- Set of six ditto, Red, Orange, Yellow, Green, Signal Green and Blue,  $1\frac{1}{4}$ -in. sq. 25/-; 2-in. sq. 40/-

Filters made to order to any double stain for bacteriological work, so as to photograph either stain as black or white. Correspondence invited for special work.

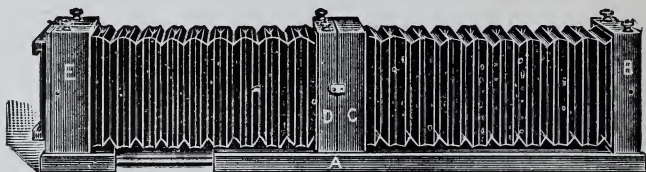
## Adjustable Stands for Light Filters for Photo-Micrography

Heavy brass base pillar stand, sliding arm, with set screws, holder to take a 2-in. square light filter ... .. 15/-

Ditto larger size, to take a  $3\frac{1}{4}$ -in. square filter, with lead filled base ... .. 21/-

**Cameras** for Photo-micrography in several patterns from £4 to £60. Estimates on receipt of requirements.

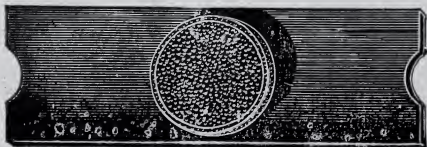
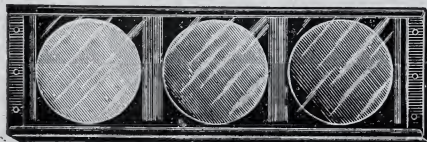
## New Model Camera for Science Workers.



The most useful pattern Camera made, for Laboratory or Natural History Work. The base **A** consists of two sliding frames, 27 inches long closed, extending to 48 inches. The bodies **B**, **C**, **D**, **E** (detachable) can be fixed in any position by the milled heads.

The illustration shows the apparatus set up as an extra long focus camera, or for photo-micrography. The removable panel in body **B** being fitted with a flange for lens or sleeve for tube of microscope and the dark slide used in body **E**. Bodies **C** and **D** are detachable and the lens panel of **B** is interchangeable with body **D**. By inserting a negative carrier in **B** the apparatus can be used for enlarging or reduction, or lantern slide work.

## New Pattern Black Bronzed Brass Repeating Filter Holder

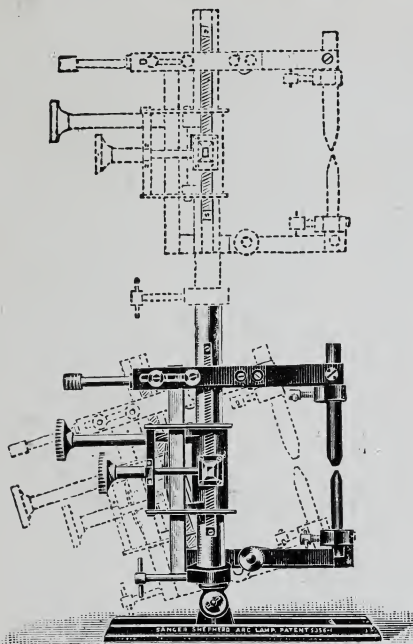


New pattern black bronzed brass repeating filter holder, bronzed closed case with hood and leather cap on front and split ring to fit on lens tube at back. Very light carriers for three filters (extra carriers can be had) suitable for three colour, micro, or orthochromatic work.

Prices, best finish.

For Three  $1\frac{1}{4}$ -in. sq. filters... 18/6  
 „ Three 2-in. „ ... 25/-

## THE SANGER-SHEPHERD ARC LAMP.



A perfect hand-feed Arc Lamp built on an entirely new model for Projection Work, Photo-Micrography, Illumination of Paintings, Spectroscopy and General Laboratory Work.

## Special Features.

Extreme range of all adjustments.  
The simplicity of its manipulation.  
Extreme Steadiness and Rigidity.  
Working equally well with Direct or Alternating Currents.

The height of the Arc from the base is adjustable from  $3\frac{1}{2}$  inches to 18 inches, and the pillar standard can be canted to any angle. The base is reversible from back to front, and by swinging the lamp round on the pillar the Arc can be brought the same distance from the front horns of the base when in the canted position.

Write for illustrated leaflet.

No. 1 for Currents to 15 amps. **105/-**

No. 2 for Currents to 65 amps. **168/-**

Pine cases 5/- and 10/6

Carbons for continuous currents, 5 to 9 amps., per doz. pairs	...	...	2/-
„ „ „ 10 to 15 „ „ „	...	...	3/-
„ for alternating currents, 5 to 10 „ „ „	...	...	2/6
„ „ „ 10 to 15 „ „ „	...	...	3/6
Resistances wound on porcelain, C. I. base, for 100/110 volts	...	...	25/-
„ „ „ for 200/250 volts	...	...	50/-
Adjustable Resistance, best quality, for low voltages	...	...	55/-
„ „ for 200/250 volts	...	...	117/6
„ „ for lowering c.p. of Dark Room Lamp	...	...	11/6
Flexible Cord, best silk covered, to 15 amps., per yard	...	...	-9
„ „ cotton covered „ „	...	...	-7
„ „ preparing ends, to attach to arc lamps, per pair	...	...	2/6
Voltmeter, to show voltage of currents to 110 volts	...	...	50/-
Ammeter, for currents up to 20 amps.	...	...	45/-
Russian Iron Lantern, without condenser, for use with the No. 1 Lamp, for Laboratory, Photomicrographic, or Spectroscopic work	...	...	25/-

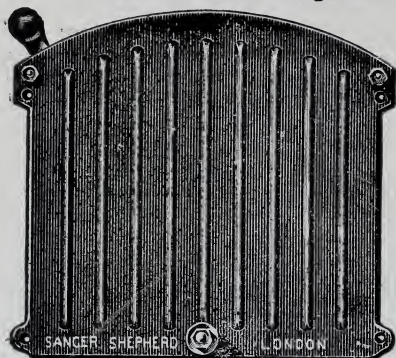
## SANGER-SHEPHERD SPECIAL SCIENCE LANTERN.

**Five Specifications. Particulars on application.**

5, 6 & 7, GRAY'S INN PASSAGE, LONDON, W.C.

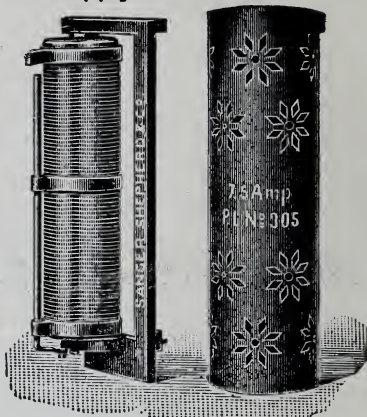


## Resistances for Regulating the Supply of Currents.

**Best quality Adjustable Resistance.**

—In this Rheostat the heat generated in the Resistance wire is rapidly conducted to a supporting plate, which becomes the Radiating surface. This is accomplished by the use of enamel, which attaches the wire to, but insulates it from the radiating surface-plate, it completely surrounds the wire and protects it from chemical action. In this way the capacity of a small Resistance wire is greatly increased. The exact amount of Resistance required is instantly adjusted by moveable handle.

For low voltages **£2 15s. 0d.**



Resistance wound on porcelain bar, mounted on cast iron base, with ventilated cover

100/110 volts, **£1 5s. 0d.**

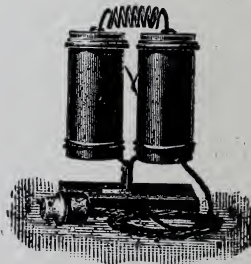
200/250 volts, **£2 10s. 0d.**

For pressure of 200 to 250 volts **£5 17s. 6d.**

## NEW PATTERN ARC LAMP FOR LABORATORY WORK, 125 Candle Power.

A low power Lamp, invaluable as white light illuminant for  
**MICROSCOPIC,  
SPECTROSCOPIC,  
and PHOTOGRAPHIC Work.**

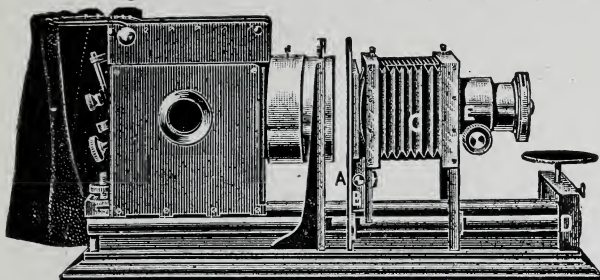
**SPECIFICATION.**—Automatic Arc Lamp in nickel-plated ventilated cover, suspended on adjustable stand with self-contained resistance, fine centring adjustment by screwed nut suspensions. Requires only  $1\frac{1}{2}$  amperes on 100/110 volt direct current circuit. Complete with flexible cord and plug, for instant attachment to ordinary bayonet lamp socket. Price complete as shown **£4 10s.** Lamp only for suspension **55s.** Also supplied for 200 volts.



Extra resistance for 200 volts, on  
Special Stand, **30/-.**



# Sanger-Shepherd & Co.'s Improved Optical Lantern.



The body is entirely of metal, and is furnished with arc lamp or limelight jet. The two condensers,  $5\frac{1}{2}$ -in. and 4-in., are mounted in bayonet-joint cells. The optical base consists of a series of four-pairs of stout, truly fitted brass tubes, all of which, with the exception of the rear pair can be removed. The slide stage is adjustable to or from

the condenser to accommodate a glycerine or alum trough. The front is fitted with slip-up panels for easy exchange of objectives, microscope, polariscope or spectroscopy fronts.

The Lantern forms a perfect instrument for Projection of Lantern Slides and  $\frac{1}{4}$ -plate Transparencies. Projection of Microscopic and Polariscopic Slides and the Spectrum. Enlarging from  $\frac{1}{4}$ -plates or Lantern Slides. Enlarging from portions of large Negatives. Projection of Parallel Beams. Illumination of Paintings, and General Science Work.

Lantern complete, with a 4-in. triple condenser objective and best limelight jet	£20	0	0
Ditto, but with Sanger-Shepherd No. 1 Hand Feed Arc Lamp in lieu of jet	24	10	0
Ditto, but with Rackwork Focussing Jacket, and three slip-in lens barrels	26	10	0
Cheaper Model	15	15	0
Strong Pine Case, fitted for accessories, extra	1	5	0

Microscope, Polariscope, and Spectroscopy fronts to order.

## Triple Projection Lantern.

Triple lantern attachments or lantern photo-chroscope, for demonstrating the synthesis of white light and for projection of the black and white positives, made from trichromatic negatives in natural colours. Improved model

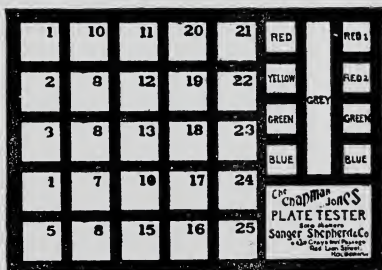
Ditto, ditto, but built on one base, with Russian iron lantern for limelight or arc lamp. Price without lamp or jet	£10	0	0
Sanger-Shepherd hand feed Arc Lamp for ditto, extra	£12	10	0
High power mixed jet, adjustable stand and tray, extra	5	5	0
	£3	15	0

## The Chapman-Jones Patent Plate Tester.

(SANGER-SHEPHERD & Co., Sole Makers). A simple instrument for testing photographic plates and films; examination of plate shows: 1. Sensitiveness or Speed; 2. Range of Gradation; 3. Possible range of Exposure; 4. Colour Sensitiveness; 5. Grain; 6. Halation; 7. Most suitable Dark-room Light, &c.

### PRICES.

Instrument complete, comprising  $4\frac{1}{2} \times 3\frac{1}{2}$  Screen plate, as above, special dark slide exposure board, folding candle shade, adjustable candle holder and standard candle in neat case with book of working instructions, 37/6, Inland Postage 1/- . Special dark slide and screen plate only, 28/6 Inland Postage, 6d. Screen plate only, in case with instructions, 21/-, Inland Postage 3d.

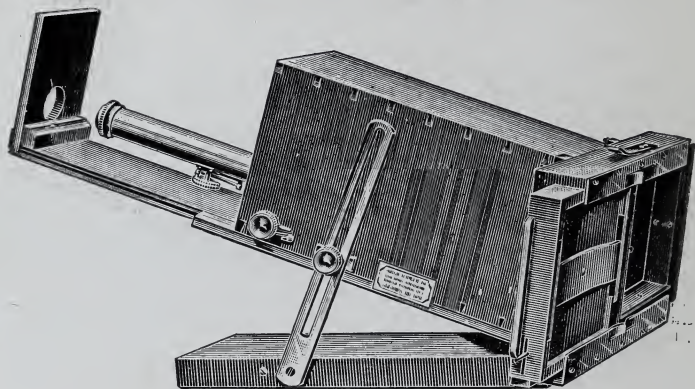


## Sanger-Shepherd Graduated Colour Sensitometer. Patent applied for.

A new and convenient instrument for ascertaining the relative red, green and blue sensitiveness of colour sensitive plates. This little instrument consists of a graduated plate  $4\frac{1}{2} \times 3\frac{1}{2}$ -in., covered by three strips of coloured filtering medium, each provided with a numbered scale. By simply exposing the plate to be tested to daylight behind this screen and developing, the relative sensitiveness to red, green and blue light can be at once seen. The instrument forms a very complete Colour Sensitometer, and can be used for many other purposes, for instance the testing of colour filters for orthochromatic work, comparison of the sensitising action of dye-stuffs, etc. Price complete £1 1s. 0d.

**Direct Vision Spectroscopes.**

Three-prism Direct Vision Spectroscope for the pocket	...	£1	1	0
Ditto, best make, Adjustable Slit and Achromatic Lens	...	1	10	0
Ditto, ditto, Large Model, £2 15s., or with Comparison Prism and				
Photographic Millimetre Scale for determining the position of the lines		4	5	0
Table Spectroscopes and Speciro-Photometers.				

**Sanger-Shepherd Photo-Spectroscopic Camera.**

**No. 1.** SANGER-SHEPHERD Photo-Spectroscopic Camera. Optical train consisting of a first-class three prism direct vision spectroscope, fitted with adjustable slit and focussing head, complete in itself and very useful as a laboratory hand spectroscope for visual work.

The Spectroscope is attached to the camera by screwing into the flange in the front panel. The body is adjustable by slotted arm to elevation of the Sun. Carrier and stage for filters, shutter, etc. Focussing screen and dark slide for  $4\frac{1}{4} \times 3\frac{1}{4}$  plates in repeating back for 4 exposures  $2\frac{3}{4} \times \frac{3}{4}$  visible spectrum on  $3\frac{1}{4}$ -in. (contact lantern slide.) Repeating back can be raised for Ultra Violet.

Price, Best Finish, 150/-; 2nd ditto, Workshop Finish, 130/-; Fitted case, 15/-  
Comparison Prism, extra ... .. 15/-  
Zeiss Engraved mm. Scale for measuring the lines on negatives ... .. 5/-

**No. 2.** A smaller model with the Spectroscope enclosed in the Camera Box.

Specification.—Outer case polished mahogany,  $10\frac{1}{2} \times 3\frac{1}{4} \times 5\frac{1}{4}$  inches deep; detachable repeating back,  $9 \times 5 \times 1\frac{1}{4}$  inches, with German silver latch, and single dark slide to take four spectra upon a quarter plate. The Spectroscope is mounted on a panel sliding into the outer case, readily detachable for visual work. Condensor on sliding base. Stage and spring clips for holding test object, light filters, &c.

The length of the Spectrum from A to K is suitable for direct contact printing of Lantern Slides. With the repeating back detached occupies a space of only  $11 \times 4\frac{3}{4} \times 5\frac{1}{2}$  inches deep.

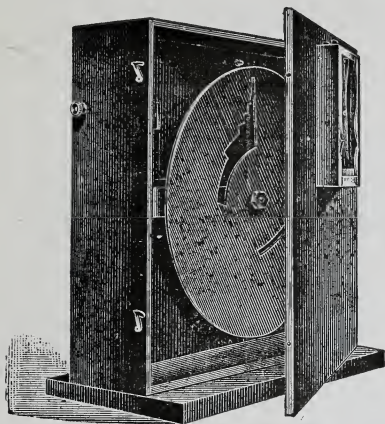
An invaluable instrument, beautifully made and always ready for use, price complete, 70/-  
Comparison Prism, extra ... .. 15/-  
Zeiss Engraved mm. Scale for measuring the lines on negatives ... .. 5/-

Repeating Back Cameras for use with Table Spectroscopes in several patterns.

**New Model Developing Dish Case and Cover.**

With the highly sensitive plates of the present day it is very essential that the plate should be kept covered during at least the greater part of the time occupied in development.

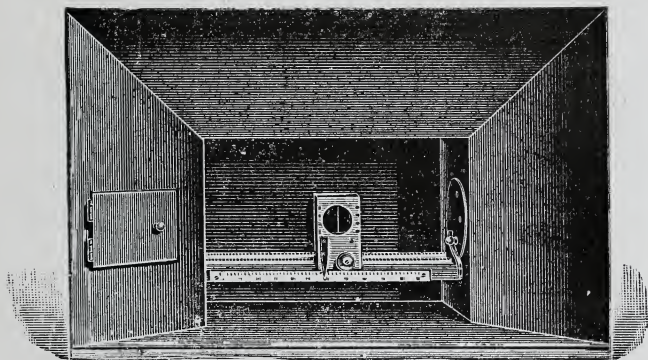
The new model consists of a really well-made tray,  $7\frac{3}{4} \times 6 \times 2$  inches deep, enamelled white inside and black outside; this tray carries the ordinary deep porcelain developing dish. The outer cover, of the same material, measures  $8\frac{1}{4} \times 6\frac{1}{2} \times 2\frac{1}{2}$ , enamelled black inside and out, and furnished with a fold-down handle. The cover fitting quite loosely is easily put on in the dark room, yet the plate is perfectly protected. Price 4s. 6d.



### Apparatus for the Hurter & Driffield Method of Speed Determination.

Exposing apparatus for impressing a series of exposures upon a plate, consisting of mahogany case fitted with sliding shutter in front and special form of single dark slide on door at back; accurately cut sector in accordance with Messrs. Hurter & Driffield's specification, 12-in. diameter, impressing nine exposures on the plate, mounted on steel axle, running in long gun metal bearings, driving pulley, complete, dull black celluloid finish, inside and out, complete as shown, £5.

### Improved 12-in. Reading Photometer.



All measurements in accordance with Messrs. Hurter & Driffield's specification.

The body of the Photometer is, however, made in stout japanned tin plate—the parts exposed to the heat of the lamps being thoroughly protected by asbestos boards and air spaces—the photometer bar is an improved form, and the sight box is moved by rack and pinion. The sight box, when racked to the extreme right hand of the instrument, can be lifted off the bar for other uses, such as calibration of electric lamps, or gas flames, used for printing, against a standard candle. The spot indicator and mirrors are conveniently arranged for removal or renewal; the right hand end of photometer is provided with revolving diaphragm with four openings, for use when reading high densities. The logarithmic scale enables densities to be read direct without calculation. The lamps may be oil, albo-carbon or electric light.

Price complete, fitted with two albo-carbon lamps, logarithmic scale on paper, £4 10s.

Logarithmic scale, engine-divided on ivory, highly recommended, extra, 5s.

Prices of 36-in. photometer with Sir Wm. Abney, or the Schmidt and Hensch indicator, spectro-photometers and other devices for reading densities or opacities, on receipt of requirements.



## THE SANGER-SHEPHERD X-RAY PLATE.

These Plates are specially prepared in order to obtain the greatest possible sensitiveness and detail by exposure to X Rays, enabling photographs with fine detail to be obtained by short exposure. They will be found particularly valuable in photographing the thickest parts of the body.

The Plates are very slow to daylight and are not suitable for ordinary photography.

### ADVANTAGES CLAIMED:

**Great sensitiveness to X Rays.**

**Enormously increased detail of structures.**

**A single thin film of emulsion quickly developed and fixed.**

**No frilling. In use in all principal Hospitals.**

### PRICE LIST.

SIZE.	SANGER-SHEPHERD X-RAY Plates, Per Doz.	VELOX GLOSSY.	SOLIO P.O.P.	BEST MOUNTING BOARDS.
6½ x 4¾	4/6	Packets, 1/-	Packets, 1/-	Per 100, 3/9
8½ x 6½	7/6	Packets, 1/-	Packets, 1/-	Per 100, 4/9
10 x 8	12/6	12 sheets, 2/9	6 sheets 1/-	Per 100, 4/9
12 x 10	17/6	12 sheets, 4/2	4 sheets 1/-	Per 100, 6/9
15 x 12	30/-	12 sheets, 6/3	25-ft. roll, 15-in. wide 6/6	Per 100, 10/-

### Sanger-Shepherd X Ray Films.

Thick celluloid films coated with a similar emulsion. Celluloid being transparent to X Rays, a film may be laid in contact with a plate and exposed together through the celluloid; on development two perfect pictures result. The glass plate is used at once for the surgeon to work by and the film washed and filed for reference—two films may be used for the same purpose.

### Sizes and Prices.

6½ x 4¾-in. ...	...	...	...	...	...	4/6
8½ x 6½-in. ...	...	...	...	...	...	7/6
10 x 8-in. ...	...	...	...	...	...	12/6
12 x 10-in. ...	...	...	...	...	...	17/6
15 x 12-in. ...	...	...	...	...	...	30/-

### Light-Tight Envelopes.

Pair of envelopes for exposing plates or films; inside with non-actinic orange paper, outside black opaque paper.

#### Prices Per Dozen Pairs.

For Quarter Plate ...	...	...	...	...	...	9d.
5 x 4 ...	...	...	...	...	...	1/-
Half Plate ...	...	...	...	...	...	1/3
Whole Plate ...	...	...	...	...	...	1/6
10 x 8-in. ...	...	...	...	...	...	3/-
12 x 10-in. ...	...	...	...	...	...	4/-
15 x 12-in. ...	...	...	...	...	...	9/-

### Exposing Frames.

Best mahogany exposing frames with renewable hard card fronts, and spring pressure boards, finished dead black, or polished—much superior to paper bags and entirely preventing scratches on the film. Prices on Application.

Sanger-Shepherd Universal Developer, box of 1, 2 and 3 ...	...	2/1
1-lb. Tin of Sodium Sulphite (Anhydrous) S.S. & Co.'s ...	...	1/9
½-lb. Tin of Sodium, Carbonate (Anhydrous) S.S. & Co.'s ...	...	9d.

Write for leaflets of Developers, and prices for developing and printing X Ray Work.

**SANGER-SHEPHERD & Co.,**



# **SANGER-SHEPHERD & CO.'S NEW COLOUR SENSITIVE PLATE. Series A.**

**Highly Colour Sensitive.**

**Popular Prices.**

For Orthochromatic and Three Colour Photography. A well made plate coated on good quality glass, supplied either backed or unbacked.

The emulsion on these plates is sensitive to the whole range of the visible spectrum, but the red sensitiveness is less than the green and blue, so that a deep special red light may be used for development. The exposures required for Orthochromatic Photography are very short, and as the progress of development can be watched, many photographers will prefer them to our Series B., which can only be developed in total darkness.

The plates being very sensitive to red, the exposures for three colour work are much shorter than required with the spectrum plate we previously supplied, but about six times as long as with our Series B. (total darkness development plate).

For all purposes we recommend the backed plates; the backing used is dead black and need not be removed before development.

## **Sizes and Prices per Dozen.**

				Unbacked.	Backed.
$4\frac{1}{2} \times 3\frac{3}{4}$ -in.	...	...	...	1/6	1/10
5 x 4-in.	...	...	...	2/6	3/-
$6\frac{1}{2} \times 4\frac{3}{4}$ -in.	...	...	...	3/8	4/5
$8\frac{1}{2} \times 6\frac{1}{2}$ -in.	...	...	...	6/6	7/7
10 x 8-in.	...	...	...	10/-	11/6
12 x 10-in.	...	...	...	16/-	18/3
15 x 12-in.	...	...	...	24/-	27/-
8 x 3 $1\frac{1}{3}$ -in.	...	...	...	4/-	4/9
$9\frac{3}{4} \times 4\frac{1}{4}$ -in.	...	...	...	4/6	5/6

For Sizes and prices of Orthochromatic Filters, see pp. 13, 14 & 15.

For Three-colour Filters, see pp. 4. Packing and Carriage extra.

We stock tin boxes to fit our standard sizes, and can ship foreign orders in tin lined wooden cases at a few hours' notice.

# **SANGER-SHEPHERD & CO.'S NEW COLOUR PLATE.**

**Series B.**

**Extra Rapid.**

As these plates are sensitive to the whole of the visible spectrum, they must be put into the slides and developed in total darkness. To facilitate working in darkness the plates are packed face to face and each pair separately wrapped in paper. This obviates any trouble as to which is the film side of the plate.

Daylight speed without a filter 78 Wynne.

Colour-filter ratio :-

Red filter 2 seconds.

Green filter 1 second.

Blue filter 1 second.

Special filters for portrait work with ratio 1 : 1 : 1.

Exposure required for fully exposed negative on landscape, when Wynne Meter Paper darkens to standard tint in 5 seconds, lens opening at F/8 :-

Red filter 4 seconds.

Green filter 2 seconds.

Blue filter 2 seconds.

## **WHEN USED FOR ORTHOCHROMATIC WORK.**

Ordinary X 5 filter increases exposure 2 times. Perfectus filter for rendering all colours correctly requires 3 times.

## **Sizes and Prices per Dozen.**

				Unbacked.	Specially Backed.
$4\frac{1}{2}$ -in. x $3\frac{3}{4}$ -in.	...	...	...	2/-	2/3
$6\frac{1}{2}$ -in. x $4\frac{3}{4}$ -in.	...	...	...	4/3	4/7
$8\frac{1}{2}$ -in. x $6\frac{1}{2}$ -in.	...	...	...	8/-	8/6
10-in. x 8-in.	...	...	...	12/-	13/-
12-in. x 10-in.	...	...	...	19/-	20/-
8-in. x 3 $1\frac{1}{3}$ -in.	...	...	...	4/3	4/9
$9\frac{3}{4}$ -in. x $4\frac{1}{4}$ -in.	...	...	...	6/-	6/6

5, 6 & 7, GRAY'S INN PASSAGE, LONDON, W.C.

## Rotating Sectors.

A new and improved pattern of Sir Wm. Abney's rotating sector. This model is the result of experience gained in the manufacture of a large number of rotating sectors. The base of the new model is of heavy enamelled cast iron, and is of L form to allow of the most convenient position for the driving motor. The mechanism for opening and closing the shutter instead of being worked by projecting pins is self-contained in the axis of the sectors, and is worked by spiral grooves cut on the axis whilst still between the centres. A new device takes up any back lash in the sectors, and the adjusting handle is provided with large friction discs, thereby securing quiet and smooth working at high speeds. Price, with solid brass standards, hardened steel, running centres, complete as shown, **£12.**

## Graduated Anulus.

For use in light measuring machines, made in two sizes from an accurate mould. The small size, 2-in. in diameter, **5/6**. Large size, 5-in., **£1 1 0**

Graduated Wedges in black and colour, in many sizes, both straight and circular. Prices on application.

## Standard Lights.

Tested Standard Candles, each, **1/-**

Three in tube, and inland postage, **3/4**

Harcourt 10-candle Standard Pentane Argand (the legal standard to the referees' specification), best make, complete, **£10.**

Acetylene Standard Lights, 5, 10 and 50-candle-power, with Platinum Resistance, or Thermo-junction Indicator, as described in the transactions of the Royal Society.

Water-jacketed Acetylene Burners and Stands; Acetylene Generators and Gas Holders; Balance Governors, in incorrodible white metal; Constant Temperature Apparatus, for developing test plates; &c., &c.

We are at all times ready to advise our customers as to the best forms of Apparatus for Testing all kinds of Photographic Materials, Plate Speeds, Gelatine, Colour Sensitiveness, Spectroscopy, Coating Appliances, &c., on receipt of specification of requirements.

## Scientific Apparatus of special designs made to order In our own Workshops.

Our Factory is equipped with the latest and best wood and metal working machines, many of which have been designed by ourselves to suit the special work for which they are intended. We are, therefore, in a unique position for the production of models of New Inventions, Cameras, or other Scientific Apparatus to special designs, either for a single instrument or large numbers. We shall be pleased to give quotations at any time.

Lenses, Cameras, and other Goods advertised by any Manufacturer or Dealer may be obtained through us at List Prices. We test all Appliances before forwarding to ensure their being quite up to Specifications. Indents from Clients abroad always receive special attention.

# SANGER-SHEPHERD & Co.,

FACTORY AND OFFICE:—

**5, 6 & 7, GRAY'S INN PASSAGE,  
RED LION STREET, HOLBORN, W.C.**

*NOTE.—Gray's Inn Passage is the second turning on the right in Red Lion Street, coming from Holborn.*

SANGER-SHEPHERD & Co.,



